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(54) Title
NUTRITORY INDUCTION SYSTEM

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(57)

A Nutritory Induction System is disclosed. This device allows water to enter through the inlet port (8), wherein, entering the inlet stabilization chamber (19), whereupon, the liquid flows through a series of valves, through a directional control device (16), whereby, the direction of that current is altered to flow in conjunction with the vessel's inner wall (6), therein, creating a vortex, mixing the liquid with the solid matter inserted within the mixing chamber (15). This mixture continues its upward spiral motion, whereupon, the combination of liquid and soluble nutrients are allowed to pass through a filtration device (14), "Application of the Theory of Static Transangular Repulsion," whilst, those larger and or nonsoluble components of that solid matter are repelled.

Upon the removal of that pressure or current, that series of valves automatically begin to close, thereupon, opening a drain piston, allowing the inlet stabilization chamber (19) to drain of fluid, aided by the vacuum release valve (7), whereof, the fluid drains through the facilities provided within base section A (9) and base section B (20), therein, removing the threat of Bacterial Displacement.

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Regulation 3.2

AUSTRALIA

Patents Act 1990

ORIGINAL
COMPLETE SPECIFICATION
STANDARD PATENT

Invention Title: Nutritory Induction System

The following statement is a full description of this invention, including the best method of performing it known to me:-

NUTRITORY INDUCTION SYSTEM

This invention relates to the introduction of the nutrients of solid matter into standard liquid irrigation systems...

For many people today, the thought of having a well fed garden with lush growth, would be the Ideal. However, the lack of time, abilities, knowledge and or skill required to reach this paragon, is, for many, unattainable.

In the residential sector of our communities, there are few facilities, for the purpose of semiautomatic, and or automatic, even distribution of the proper nutrients within the garden. There is a vast array of High Tech Irrigation Systems, most of which do little more than apply water. Whereas, contained within the water, are added elements which perform to make the water safe for Human consumption. Those elements however, strip the Plant and it's Ecosystem of certain soil nutrients and tend to alter the soil's PH Balance.

There are many products in the Market Place, for the purpose of Fertilizer Distribution. To the average person, however, the majority of these products are complex, constrained, cumbersome, incomplete, and many times, incompatible with other operating systems. While many of those products being of an Ecologically unsound nature, by way of containing excessive waste by-products. With most of that waste being in the manner of Non-Repairable devices.

There are equally as many forms of Fertilizers, though, irrespective of the nature of the fertilizer, it, the fertilizer has to be uniformly spread. Even if this step is done correctly, the fertilizer does not take effect until water is added. Regardless of the method of distribution of the fertilizer, this takes much time, and patience. Both, being commodities, which are hard to come by in this day and age.

To overcome these problems, this invention:

Is User-Friendly, in Operation, by requiring the operator to manipulate only one latching device to make easy, the removal, and or, the replacement of the top section. This being the minimal steps to necessitate the insertion of the Solid Matter Fertilizer, and if required, the removal of the Non-Soluble components of that Solid Matter Fertilizer's physiological make-up, upon depletion of it's nutritional value.

Is Child Resistant, by the incorporation of a Slide Locking Mechanism, within the afore mentioned latching device, whereby, this mechanism acts to deflect a small child's fingers.

Is User-Safe, without the use of dangerously obtrusive appendages or apertures. whereby, all of the mechanical operations, to include mechanical devices are located within the body.

Will effectively replenish Nutrients, washed away by the use of Chlorinated Water, thereto, whilst not being limited to this application, will increase the Nutritional Value in respect of the usage of Recycled, or Grey Water.

Is User-Safe, in respect to Bacterial Displacement, by means of containing a series of valves, incorporated to meet International Specifications referring to Back Flow Prevention, too include the use of multiple application testing valves. Whereby, this invention is complete for the purpose of installation.

Is Ecologically Sound, by being repairable, whereby, should a component become damaged or otherwise inoperative, replacement of that piece is possible.

Is Service-Friendly, for the purpose of installation, through the use of acceptable standards of Plumbing threads and sizes, thereby being compatible with all standard Irrigation Systems.

Is Service Friendly, for the purpose of Internal Service, by the use of large, "Speed Thread", thread system. This thread design will eliminate the possibility of physical damage to those threads, resulting from misalignment of components during service operations. This thread design has additional bearing on the nature of preferred material to be used, during fabrication, though not being limited to that, "Preferred," material.

Will contain a method of creating a Vortex of water within the systems body. This vortex of water will thoroughly agitate the solid matter, placed within the containment vessel, to maximise the removal of the nutritional value of that solid matter fertilizer.

Will retain the nonsoluble components, of the solid matter fertilizer by the use of a screening device. This device will effectively clear or repel the residue, that could otherwise, in turn build up, which if allowed to build up would impede or obstruct the flow of water to its outward destination.

Is adaptable, by not being constrained in size, whereby, could be utilized in the Residential Sector as well as in the Commercial/Industrial Sector. Whereas, this invention can be used effectively on an individual basis, and or , used most efficiently, when in multiple, or bank arrangement when used with computerized operating systems.

Allows, the water to flow from the source. "tap", into the inlet ' amber. located within the body, wherein, the flow of water is restabilized. From this cha.nber the water flows through a series of valves, whereupon, this series of valves are activated by the pressure of the water. From that series of valves the water travels through a device that will re-establish the direction of the liquid current flow, thereby creating a Vortex of liquid by which will agitate the solid located therein. This mixing action will dissolve the soluble components of that solid matter.

From this point, the liquid will carry with it, the dissolved components, wherein the viable nutrients are located, through a screening device. The intrinsic nature of this screening device is to interact with the vortex previously created, whereas, it is the action of that vortex to which the screening device acts to counterbalance, whereby the non-soluble components, too include those particles not completely dissolved are repelled. From this point the liquid will carry with it, the nutrients gained to its outward destination, the irrigation system...

In one form of the invention, the majority of components can be fabricated by means of Injection Moulded PVC Plastic, whereby the overall manner of manufacture is incorporated to reduce the labour input as well as reducing the weight of the completed version of this form of the invention.

In this form, all of the components can be housed in a single cylindrical format, thereby being compact, to allow for mobility pending application, whereas, this version can be fixed in position, again, pending application.

In this form, the water flows inwards, through an inlet port, into a stabilization chamber, wherein, the current of fluid is redirected upwards.

From this point, a series of valves are opened, whereby, it is the fluid's upward motion combined with the build up of pressure that activates the opening of these valves. This series of valves are fundamental components in respect to Bacterial Displacement, therefore, it is essential that the integral design of these valves do not allow bacteria laden sediment to enter the stabilization chamber during the process of the opening of the valves, thereto, it is the current and pressure of the liquid combined with that elemental design, which will carry this sediment upwards away from the valves.

From this point, the fluid will flow through a thin directional control disk, containing a series of perforations, wherein, these perforations shall be angular, with a degree of rotation, whereby, as the fluid flows through these perforations, the current's direction is altered, outwards and upwards.

From this point, the fluid is guided by the inner wall of the containment vessel, wherein, continues the upward spiral motion, in the form of a vortex. It is the action of this vortex, which will in turn lift, agitate and dissolve the solid matter placed, or located within this section of the invention.

From this point the liquid will carry with it, the soluble nutrients through a screening device. This screening device is fundamental in the process of filtering the size of the particles, which are allowed to pass through, whilst those larger, and or, non soluble particles are repelled, whereby, allowing the fluid containing microscopic particles to pass through.

The overall concept of this screening device shall be static, wherein, it shall contain a series of ribs, fixed into position.

The first set of ribs shall be spiral in configuration, in direct opposition to the direction of the fluid current flow, whereby this rib becomes an interactive corrupter, in reference to restabilization of that current flow.

The second set of ribs shall be vertical and straight, and shall be the main supports of this structure, whilst maintaining the essential shape, will interface with the third set of ribs, whilst performing the function of supporting a fine mesh, within the voids between this second set of ribs, whereby this rib becomes an interactive suspension rib.

The third set of ribs shall be vertical and straight, and are retroactive in reference to the second interactive suspension rib, whereas these ribs act to return or remit the incoming current, creating turbulence between the second and third ribs, whereby, this build up of pressure will act to repel particles from the fine mesh, thereby maintaining a clear passage for the fluid containing nutrients gained from the previous process, too include those minute particles to pass, whereby, this set of ribs becomes the retroactive turbulence remitifier.

From this point, the combination of fluid and nutrients will flow through the top section, onward through the outlet, outward towards the irrigation system.

Upon the removal of the pressure of the liquid entering the inlet port of the invention, regardless to the nature of that removal, the following action shall be deemed as, "Shut Down", whereby, the shut down process begins with the removal of the inlet pressure.

In the shut down process, the afore mentioned series of valves which are spring loaded to stay closed, begin their automatic descent. The lower valve of this series shall actuate a

piston located in the centre of the lower casing, whereby, this action causes the stabilization chamber to drain of fluid, wherein, a vacuum is created, whereupon, a vacuum release valve opens, breaking the vacuum by allowing air to enter the stabilization chamber, beginning, in the uppermost region of that chamber, thereby, complete fluid removal from the stabilization chamber is possible via the drain piston port holes.

In this form of the invention, all of the internal components are accessible for the purpose of service, thereby, the removal of the top section will access the screening device, wherein the screening device is attached, by means of, "Speed Thread", whereas, all other components are accessible from the base of the invention, by means of integrally designed components, incorporated to perform multiple mechanical functions, whereby, each component is secured to the overall invention by means of, "Speed Thread."

In this form of the invention, the afore mentioned vacuum release valve, will have multiple applications, whereby the first application shall be, "Vacuum Release". The second application shall be, "Testing Facility", for the means of sampling the water quality.

In this form of the invention, there shall be two of the afore mentioned vacuum valves, for the purpose of Objective Water Sampling, one in the afore mentioned lower location, the second located in the uppermost section of the body, yet not within the throat, or top section.

In this form of the invention, the top section shall be secured to the throat section by means of a latching device, utilizing a single lever, for the purpose of tension application and its release. A sliding mechanism, combined with the facilities to allow the usage of a, "Pad Lock."

In another form of this invention, the majority of the components can be fabricated from various metals. This form is directly related, to the proportional size and equivalent pressure requirement. Whereas, the relative pressure requirements may alter the quantity of the screening devices, thereby meeting that demand increase.

In this form, the top section may be secured to the throat section, by means of screws, bolts, and or, other methods containing interlocking compression devices.

In this form, the vortex emitter may involve jets and or fins, angled in proportion, whereby, the fluid movement, through and or over, will in effect, create the required vortex.

In this form, the invention may be mounted on a truck, or trailer, and or combination thereof, for the purpose of mobility, by which, access to remote areas could be possible,

whereas, the invention could be mounted in a fixed location, to suit the needs of a large agricultural region.

In this form of the invention, the materials and methods of construction rely on the relative size of the application intended.

To assist with understanding the invention, reference will now be made to the accompanying drawings which show one example of the invention.

In the drawings:

Pg. 1/9, FIG. 1 Elevation; Shows one example of the Nutritory Induction System according to this invention.

Pg. 2/9, FIG. 2 Section; Shows the example of the Nutritory Induction System with the internal components exposed.

Pg. 3/9, FIG. 3 Elevation; Shows the example of the, "threaded base," section of the screening device.

Pg. 3/9, FIG. 4 Plan; Shows the example of the, "rib and screen," section of the screening device.

Pg. 4/9, FIG. 5 Elevation; Shows the example of the , "filter area," section of the screening device.

Pg. 5/9, FIG. 6 Plan and FIG 7 Section; Shows the example of the Directional Control Device.

Pg. 6/9, FIG. 8 Section; Shows details of the Lower section of the invention.

Pg. 7/9, FIG. 9 Section and FIG 10 Plan; Shows details of the Vacuum Release Valve Assembly.

Pg. 8/9, FIG. 11 Plan; Shows the relative location of the Vacuum Release Valve in relation to the Inlet Port.

Pg. 8/9, FIG. 12 Plan; Shows the Secondary Valve Spring Support Disk.

Pg. 8/9, FIG. 13 Plan: Shows both the, Base section A and B, and the Valve Assembly Casing A and B.

Pg. 9/9, FIG. 14 Elevation, FIG. 15 Plan, FIG. 16 Section: Shows a latching ring.

Referring to FIG. 1 it can be seen, that the Nutritory Induction System according to this invention, is cylindrical in configuration, containing minimal external apparatus, in the form of threaded nipple inlet 8 and outlet 1, with vacuum release valves, A 5 and B 7. In this representation, it can be seen that the top section 2, is secured to the throat section 4, by means of a simple latching device 3, thereto, that the body 6, has no apertures.

Referring to FIG. 2 it can be seen that as the water flows through the inlet 8, entering the inlet stabilization chamber 19, wherein, the direction of the current is altered upwards through a series of valves, therein, flowing through the directional control disk 16. Thereupon, entering the mixing chamber 15, whereby, continues to flow through the screening device 14, through the outlet stabilization chamber 10, and outlet 1.

Thereto, it can be seen, that the base section A 9, and base section B 20 are multifunctional, whereby, interacting with the incoming current to aid in the redirection of that current, there in reducing the backpressure which would otherwise occur, hereto, it is that multifunctional application, whereby the drain piston assembly is retained.

There again, in the area of the valve assembly, it can be seen that the secondary valve assembly casing 18, and the primary valve assembly casing 17, are, multifunctional. Whereby, retaining the various components of their associated assembleys, whilst performing the action of reshaping the current flow.

Referring to FIG. 3 it can be seen, that the base of the screening device 22, comprises a, "Speed Thread," which is retained, (by the compression of the 0-ring 11 FIG. 2) by these threads to the afore mentioned top section.

Referring to FIG. 4 it can be seen, the relative location of the diagonal interactive corrupter rib 23, the interactive suspension rib 24, the fine mesh 25, and, the retroactive turbulence remitifier rib 26.

The Theory of Static Transangular Repulsion

Whereby the theory of , "Static Transangular Repulsion," as defined, (Static - stationary). (Trans - across/crossing) (angular - placed at angles), (Repulsion - a force separating two objects), applied herein. Static transangular repulsion is produced whereby, an incoming force is controlled by a manner of interaction between three fixed points, wherein, the interaction of that force between these fixed points will effectually return that force, to a lessor degree, whilst a portion of the matter bound within that current effectuating that force passes betwix and between and through those fixed points.

Referring to FIG. 5 it can be seen, the filtration area of the screening device. Herein, it can be seen, the relation between the diagonal interactive corrupter rib 23, the interactive suspension rib 24, the fine mesh 25, and, the retroactive turbulence remitifier rib 26, thereto, it can be seen the incorporation of multiple application within the nose cone 28, by providing, "a means to an end," whilst being coefficient with the fluid current dynamics, too include removal of fluid upon removal during the required service, from the screening device via drain ports 27.

Referring to FIG. 6 and FIG. 7 it can be seen, the form of the directional control disk according to this invention, therein contains a pressure relief vent hole 27, and a series of variant direction control ports 28, and direction of rotation 29, in reference to this invention.

Referring to FIG. 7 it can be seen, the primary valve tube recess 32, the primary valve spring retention cone 31, and the directional control disk restabilization chamber 30, are, therein multifunctionally integrated, whilst performing the overall function of direction control.

Referring to FIG. 8 it can be seen, in detail, the overall, "Lower Assembly," of this invention, therein, integration and interaction between components are most prevalent.

Referring to FIG. 9 and FIG. 10 it can be seen in detail, the vacuum release valve assembly wherein, the vacuum release valve assembly casing 63, shall be screened to allow for water sampling and pressure release, whilst not allowing foreign matter to enter from within the vessel, whereby affecting the operational function of this component.

Referring to FIG. 11 it can be seen, the angular placement, in reference to the vacuum release valves A 5 and B 7, in relation to the inlet 8, wherein this angular displacement is coefficient with the afore mentioned, "User Safety," whereby, when this invention is mounted in a fixed

position with the inlet 8, closest to the mounting surface, the physical exposure of the vacuum release valves are minimal.

Referring to FIG. 12 it can be seen the secondary valve spring retention disk 40.

Referring to FIG. 13 it can be seen, from the bottom view, the overall relationship between components; base section A 9, and the primary valve assembly casing 17, and the secondary valve assembly casing 18, and the base section B 20, with reference noted in respect to their removal ports.

Referring FIG. 14, FIG. 15, FIG. 16, it can be seen, the latching device 3, with slide 68, and locking mechanism 67. Therein, with these features, a degree of security is added in reference to, "Child Resistance and User Safety".

The claims defining the invention are as follows:

1. A Nutritory Induction System, or apparatus, comprising the means, whereby, allowing a liquid to pass through its confinements, whilst, mixing that liquid with a solid, therein retaining that solid, whereas, allowing the liquid, to pass through and out, of the confines of this apparatus.

2. A Nutritory Induction System, of apparatus, comprised of a cylindrical format, containing internal components, whereby, allowing water to pass through, wherein, a mixing of solid, therein, retaining that solid, whereas, allowing the water containing microscopic particles of that solid, to pass through and out, of the confines of this apparatus.

3. The Nutritory Induction System of Claim 1 or 2, wherein, containing a device, devices, method or methods, whereby, retaining the solid within the confines of this apparatus.

4. The Nutritory Induction System of Claim 1 or 2, wherein, containing a device, devices, method or methods, whereby, retaining the solid, whereon, the, "Theory of Static Transangular Repulsion", of Claim 1 is applied, within the confines of this apparatus.

5. The Nutritory Induction System of Claims 1 to 4, whereat, containing a device, devices, method or methods, whereby, removing the threat of, "Bacterial Displacement", in reference to, "Methods of Back-Flow Prevention", whether, attached to, or within the confines of this apparatus.

6. The Nutritory Induction System of Claims 1 to 4, wherein, containing a device, devices, method or methods, whereby, mixing the liquid and the solid together, within the confines of this apparatus.

7. The Nutritory Induction System of Claims 1 to 4 whereon containing a device, devices, method or methods, whereby, providing a means for water-sampling, whilst in operation or static, whether, attached to, or within the confines of this apparatus.

8. The Nutritory Induction System of Claims 1 to 7, wherein, containing a device, devices, method or methods, whereby, securing or retaining the individual components, therein, their respective positions, within the confines of this apparatus.

9. The Nutritory Induction System of Claim 8, wherein, all of the components are accessible.

10. The Nutritory Induction System of Claims 8 and 9, wherein, all of the components, external and internal, are replaceable or repairable.

11. A Nutritory Induction System, of apparatus, substantially as herein described with reference to the accompanying drawings.

DR D HAUS

08/11/94

ABSTRACT

A Nutritory Induction System is disclosed. This device allows water to enter through the inlet port (8), wherein, entering the inlet stabilization chamber (19), whereupon, the liquid flows through a series of valves, through a directional control device (16), whereby, the direction of that current is altered to flow in conjunction with the vessel's inner wall (6), therein, creating a vortex, mixing the liquid with the solid matter inserted within the mixing chamber (15). This mixture continues its upward spiral motion, whereupon, the combination of liquid and soluble nutrients are allowed to pass through a filtration device (14), "Application of the Theory of Static Transangular Repulsion," whilst, those larger and or nonsoluble components of that solid matter are repelled.

Upon the removal of that pressure or current, that series of valves automatically begin to close, thereupon, opening a drain piston, allowing the inlet stabilization chamber (19) to drain of fluid, aided by the vacuum release valve (7), whereof, the fluid drains through the facilities provided within base section A (9) and base section B (20), therein, removing the threat of Bacterial Displacement.

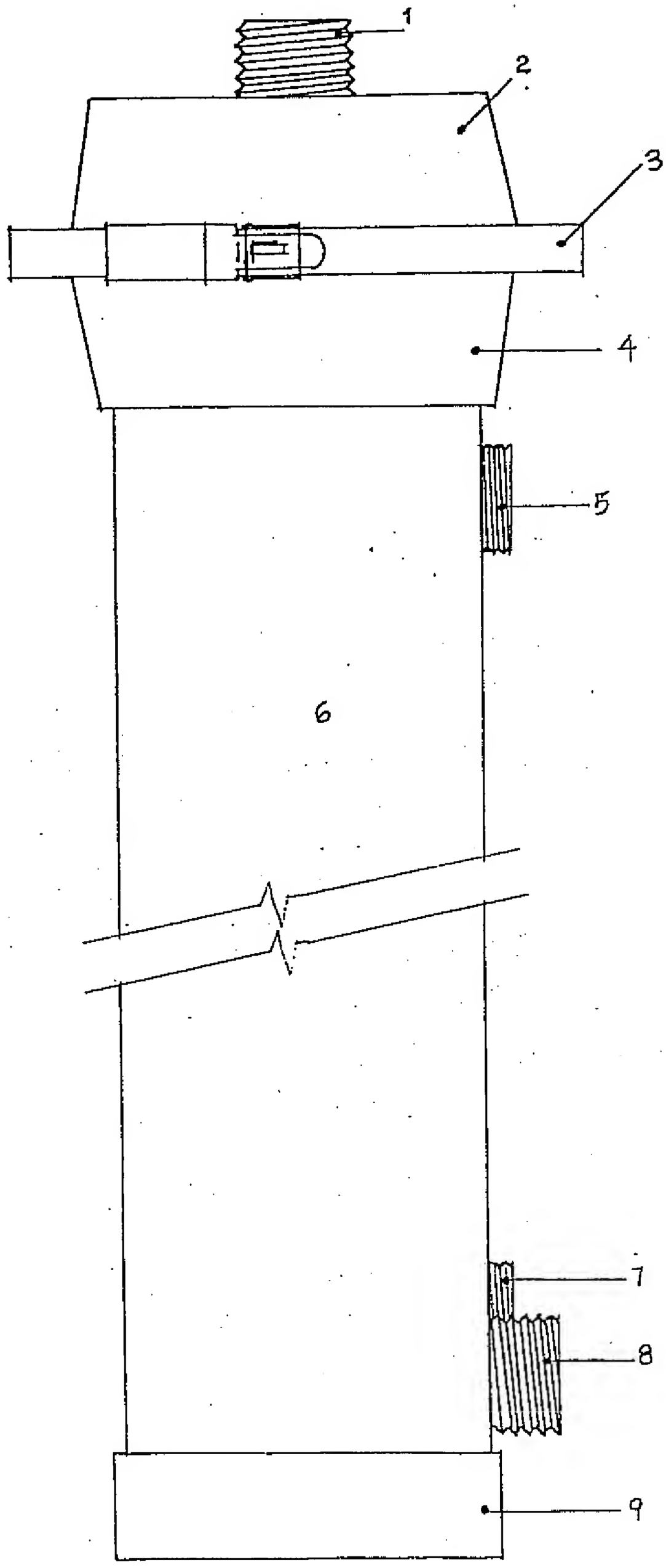

FIGURE 1

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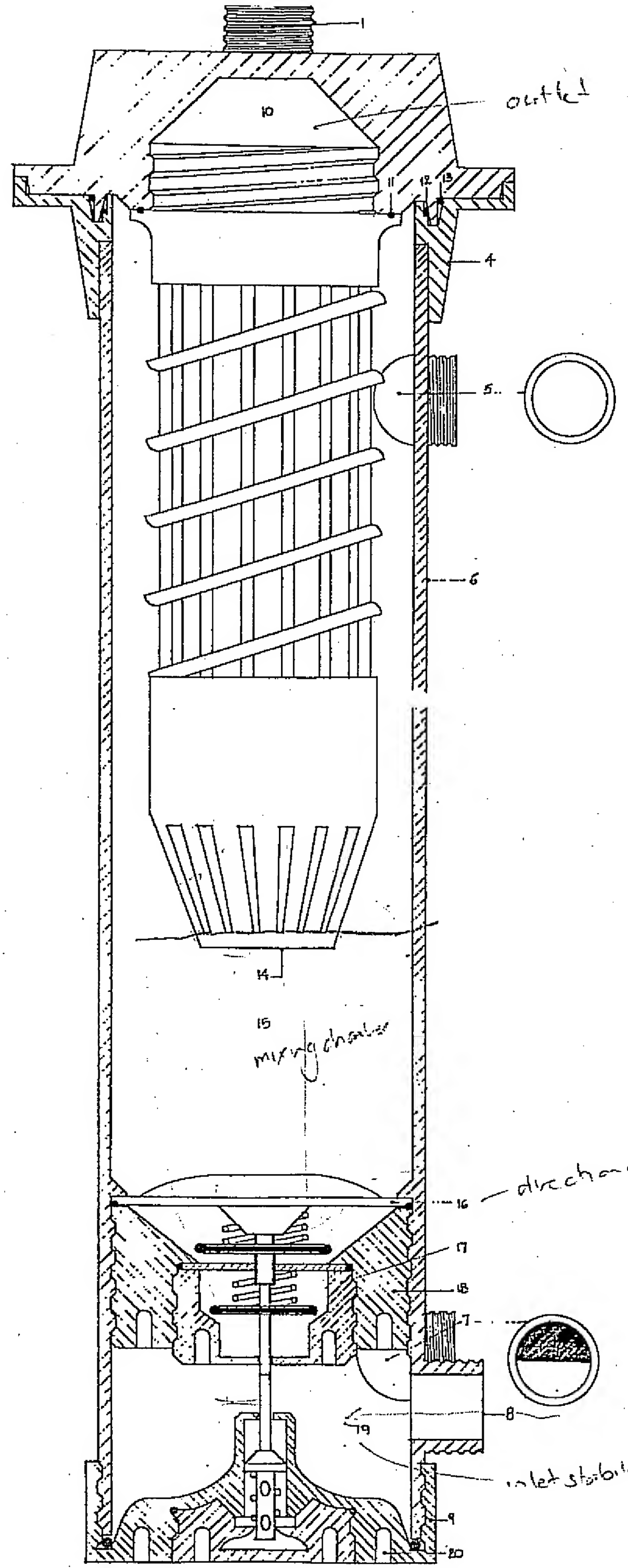
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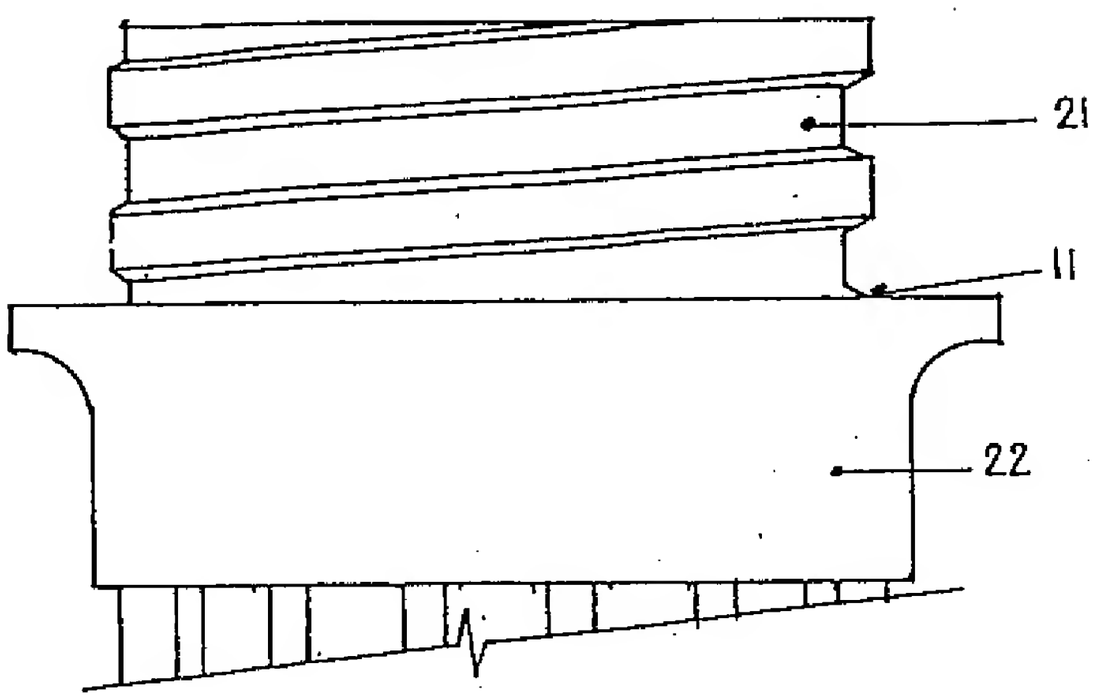

FIGURE 3

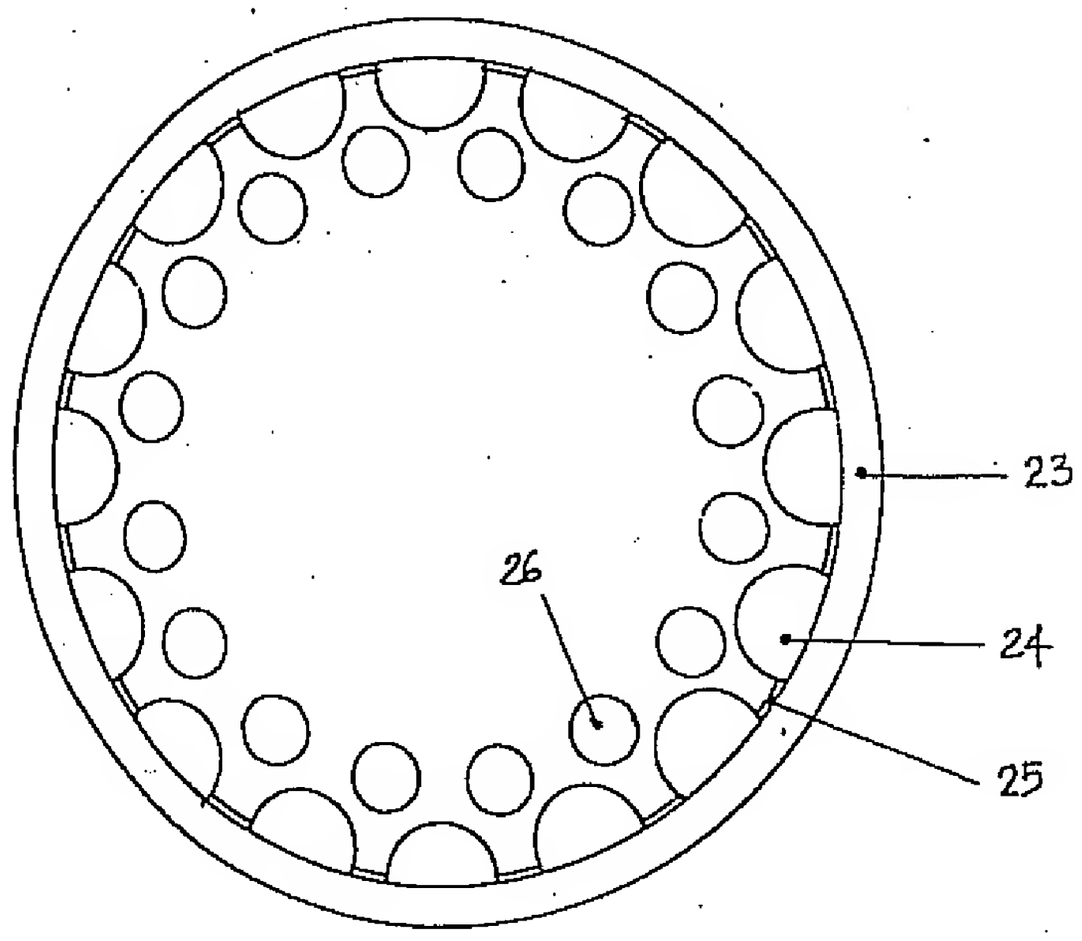

FIGURE 4

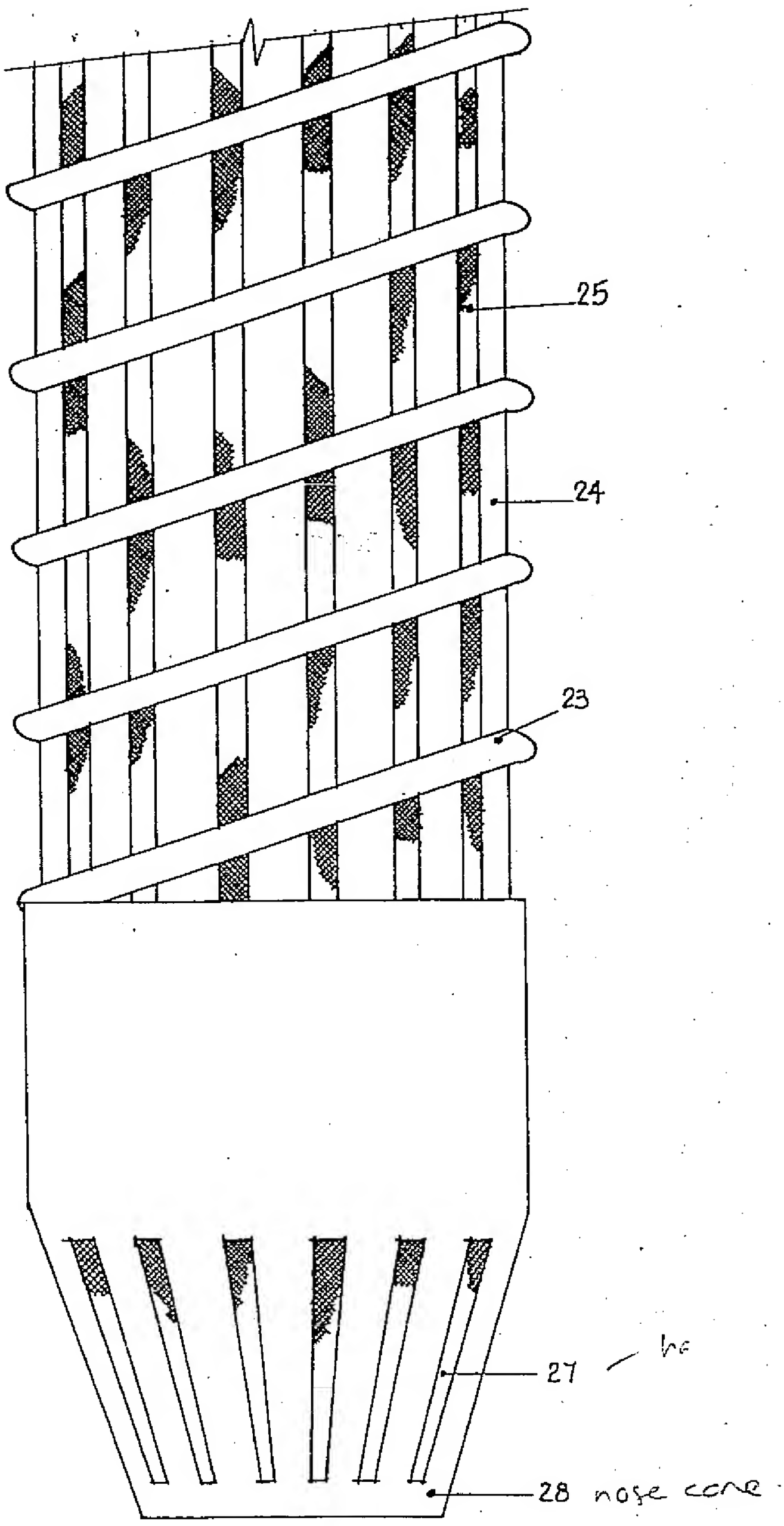

FIGURE 5

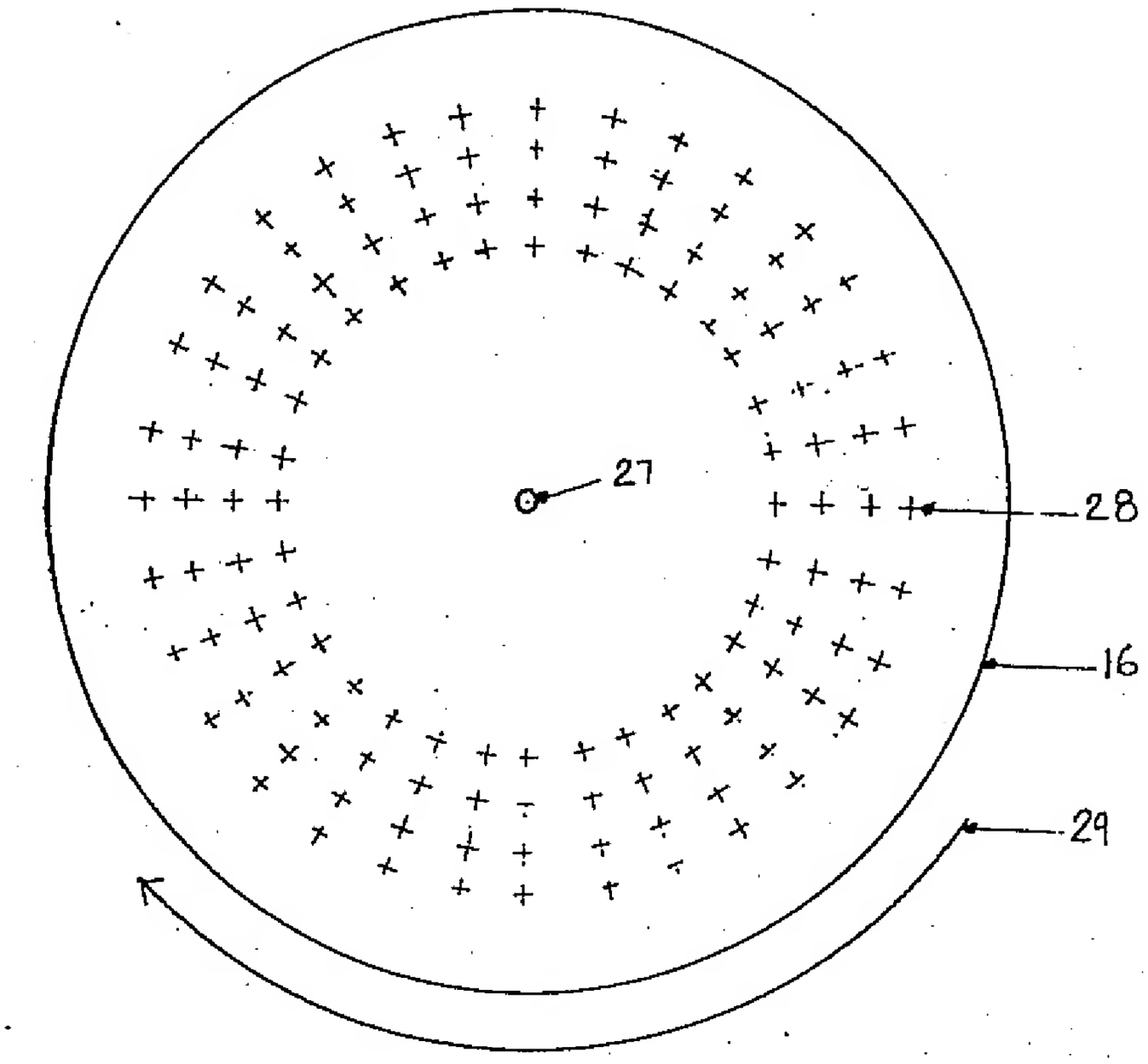

FIGURE 6

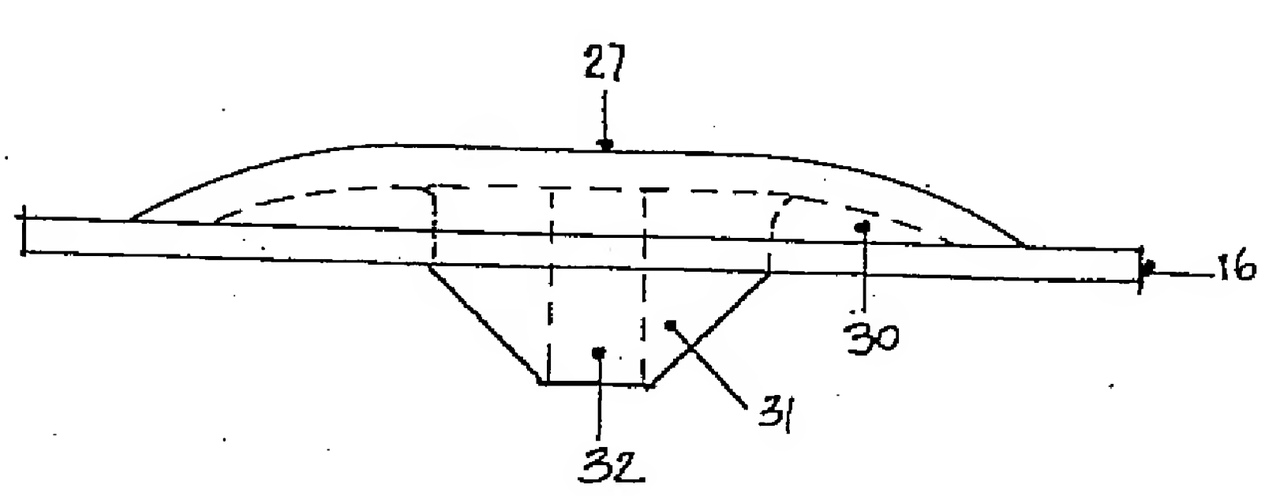

FIGURE 7

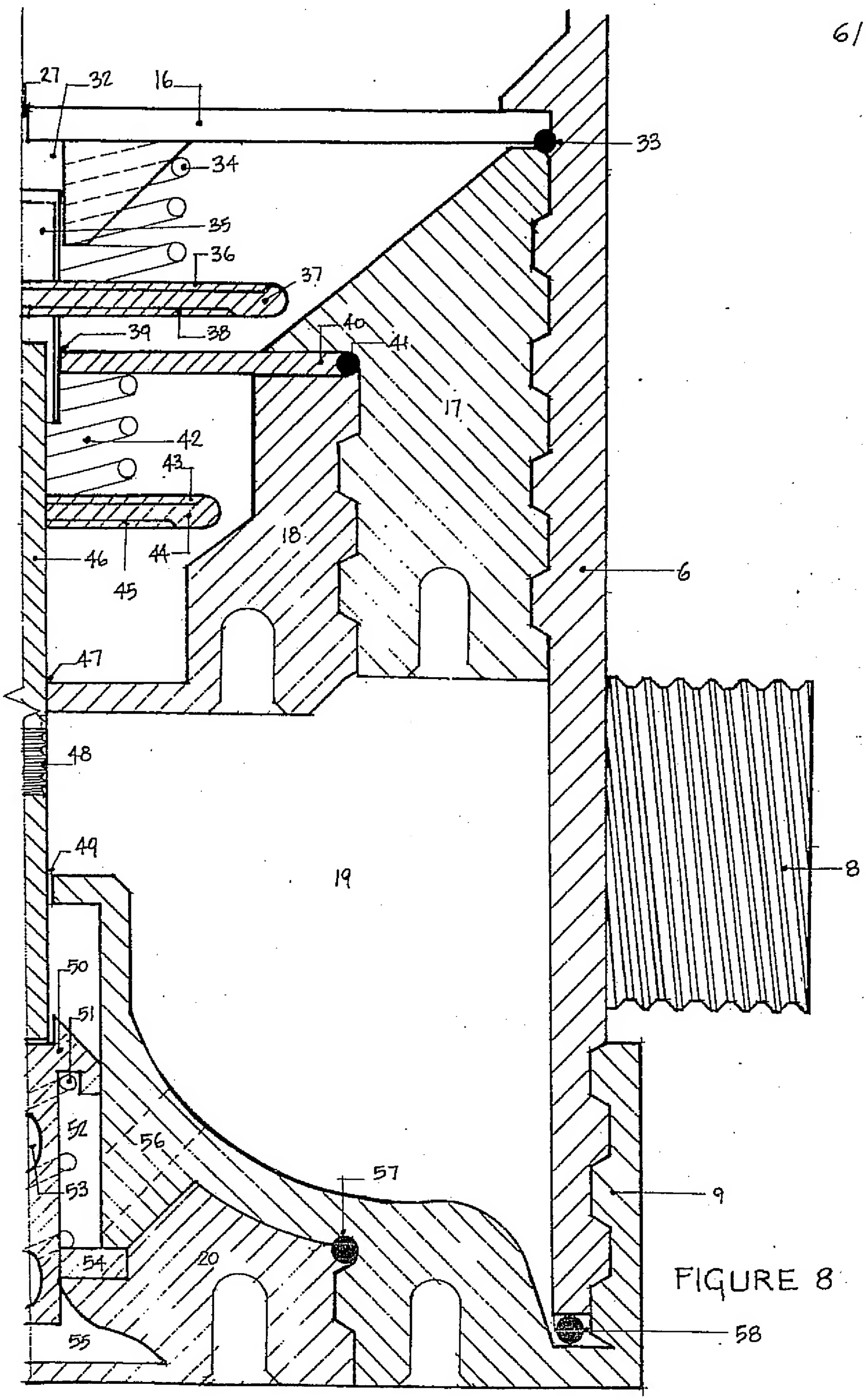
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FIGURE 8

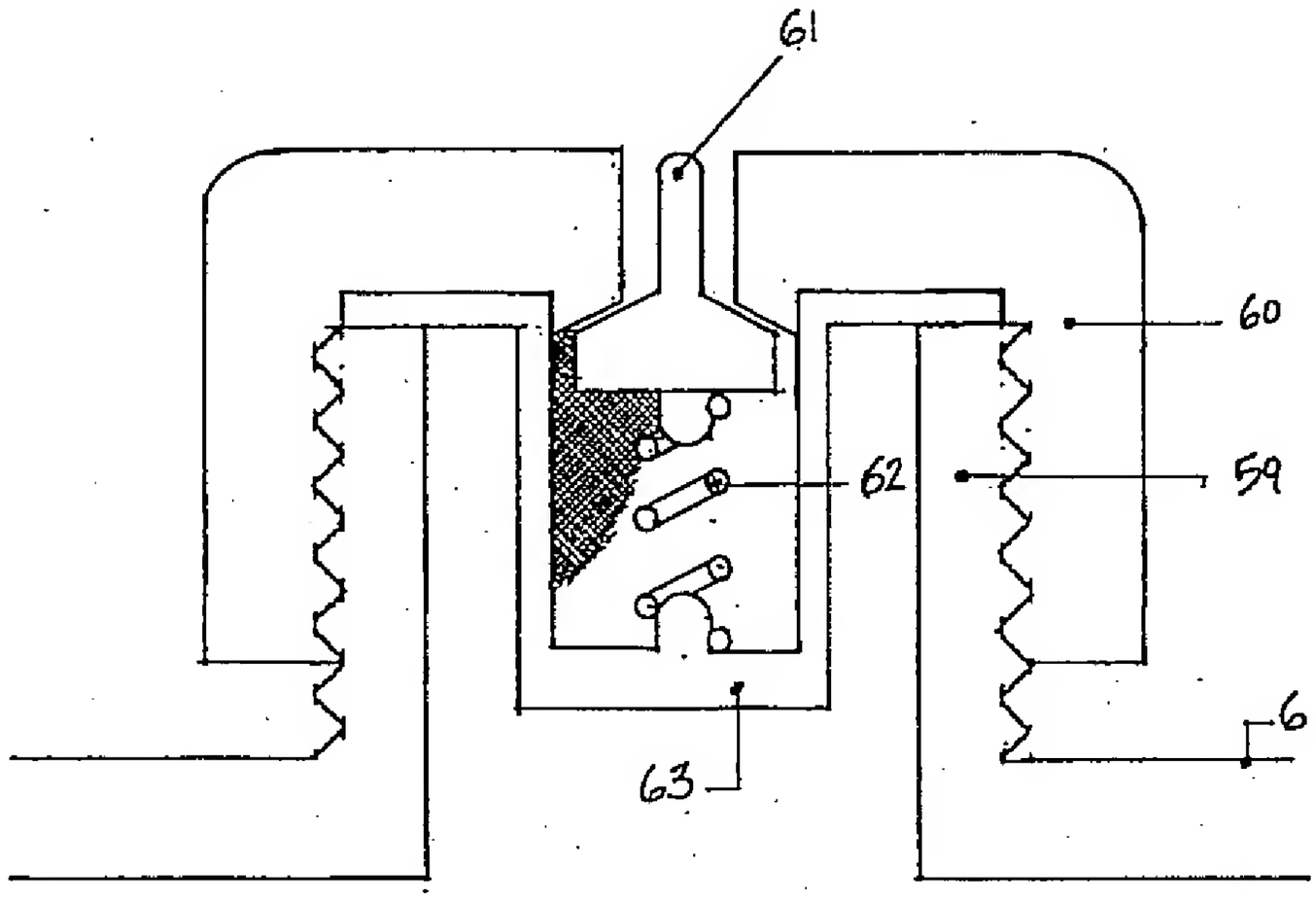

FIGURE 9

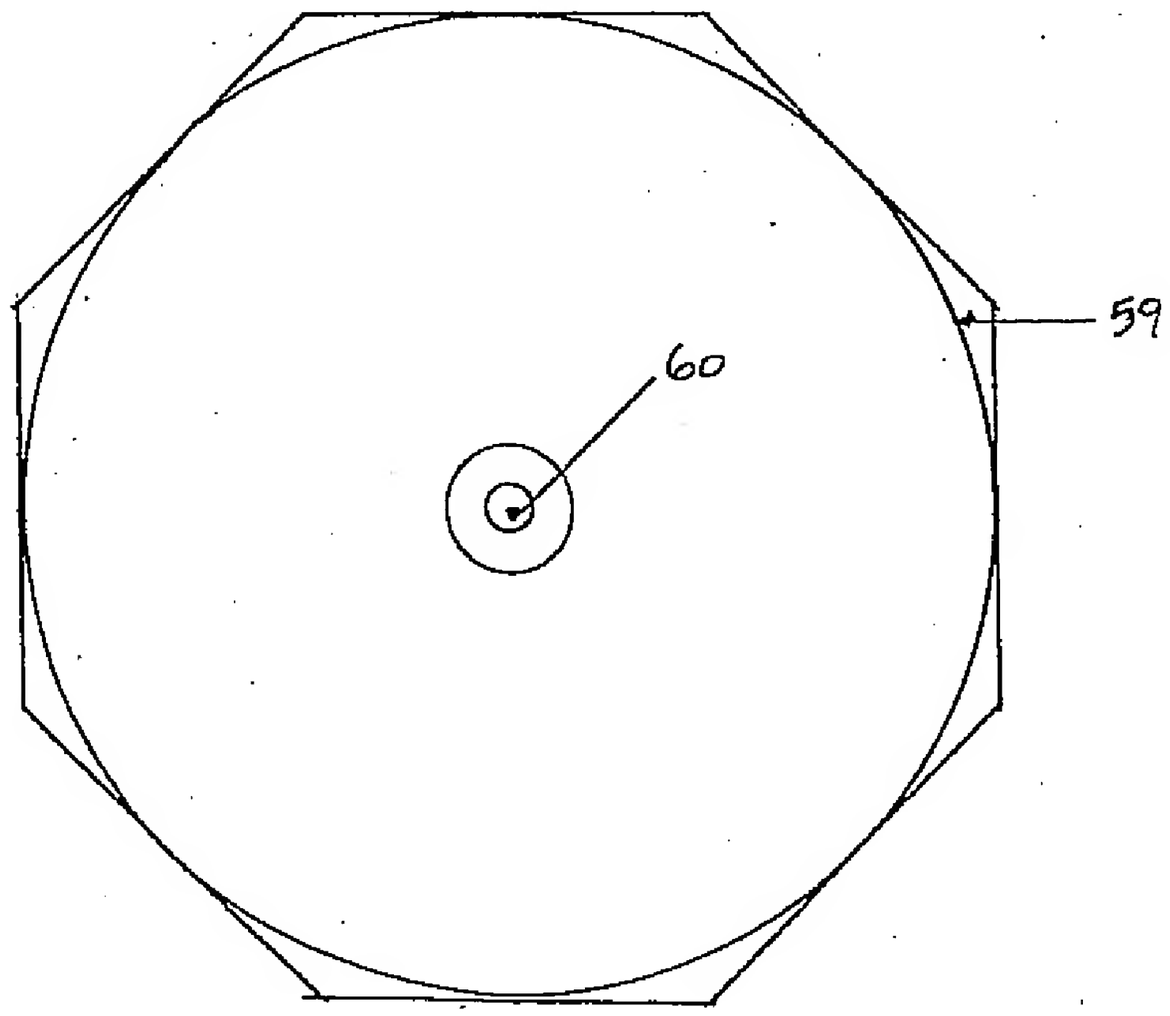

FIGURE 10

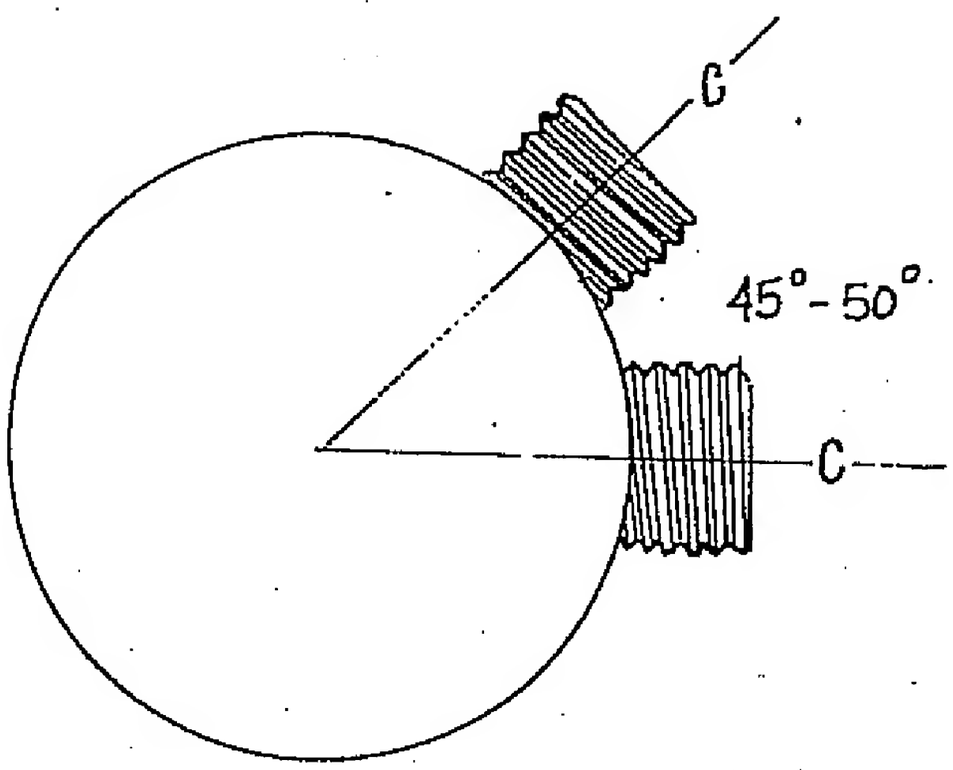

FIGURE 11

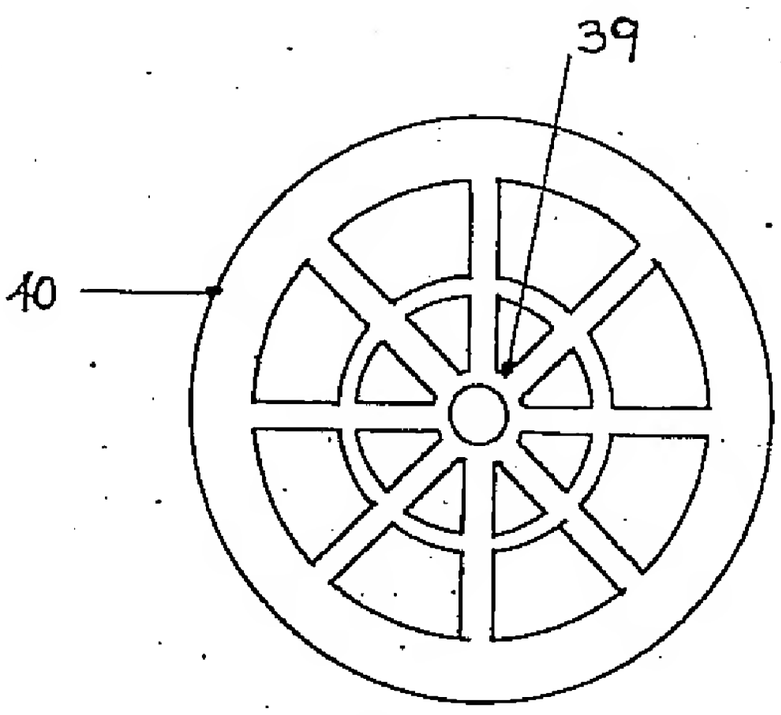

FIGURE 12

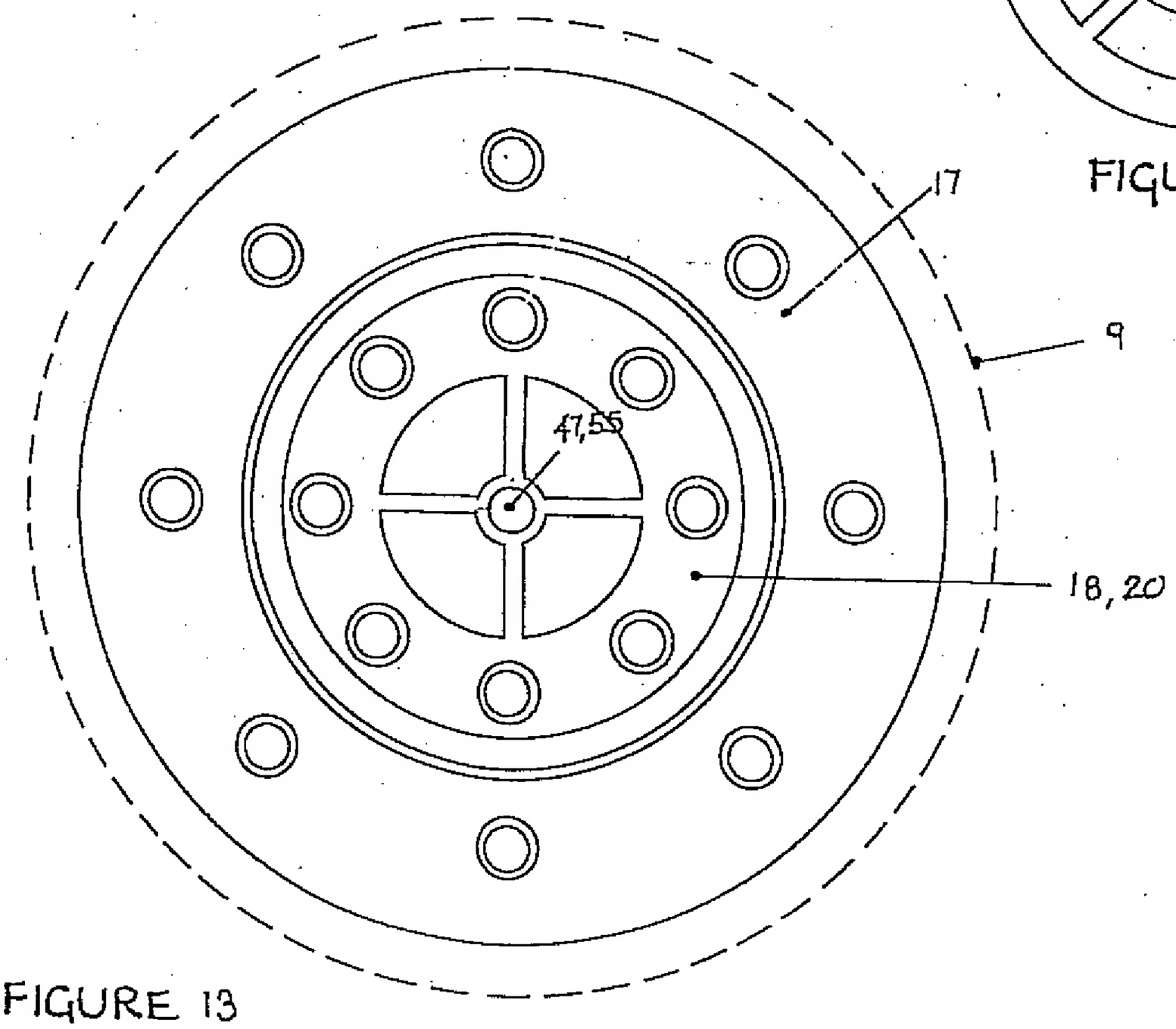

FIGURE 13

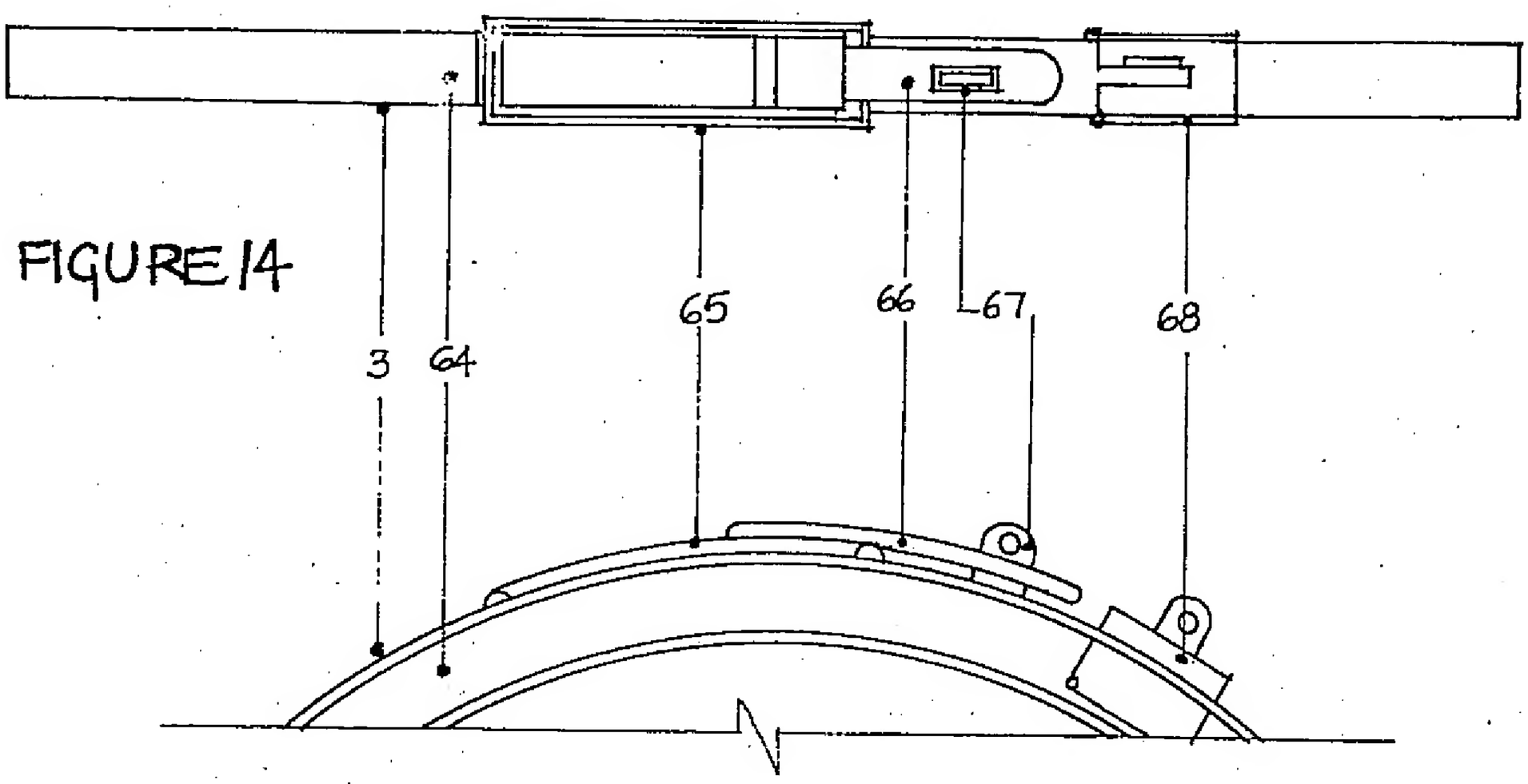

FIGURE 14

FIGURE 15

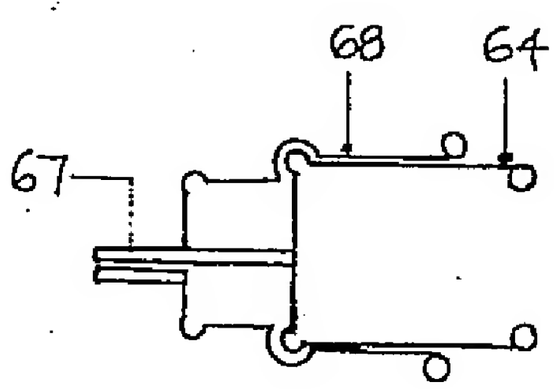

FIGURE 16